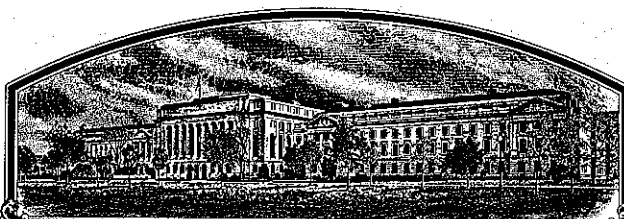


No.

9400141



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

*Northrup King Company*

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'S42-60'



*In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirty-first day of October in the year of our Lord one thousand nine hundred and ninety-five.*

Attest:

*Martha A. Sturges*

Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*John F. Hittman*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Northrup King Co.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. X9342, J812415	3. VARIETY NAME S42-60
ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) P. O. Box 949 Washington, Iowa 52353-0949 Attention: Dr. John C. Thorne		5. PHONE (include area code) 319-653-2181	<b>FOR OFFICIAL USE ONLY</b> VPPO NUMBER 9400141 Filing and Examination Fee: \$ 2,325.00 Date March 31, 1994 Certificate Fee: \$ 300.00 Date Aug. 4, 1995
GENUS AND SPECIES NAME Glycine max		7. FAMILY NAME (Botanical) Leguminosae	
CROP KIND NAME (Common Name) Soybean		9. DATE OF DETERMINATION November, 1988	F I L I N G T I M E P M.
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation		12. DATE OF INCORPORATION 1976	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware		3. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. John C. Thorne Northrup King Co. P. O. Box 949 Washington, Iowa 52353-0949 PHONE (include area code): 319-653-6645	
4. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse) a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety. b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement. c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety. d. <input type="checkbox"/> Exhibit D, Additional Description of Variety. e. <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership. f. <input checked="" type="checkbox"/> Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____ g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."			
5. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.) <input type="checkbox"/> YES (If "YES," answer items 16 and 17 below) <input checked="" type="checkbox"/> NO (If "NO," skip to item 18 below)			
6. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
8. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? <input type="checkbox"/> YES (If "YES," through <input type="checkbox"/> Plant Variety Protection Act <input type="checkbox"/> Patent Act. Give date. _____) <input checked="" type="checkbox"/> NO			
9. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> YES (If "YES," give names of countries and dates) <input checked="" type="checkbox"/> NO			
10. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s)) John C. Thorne		CAPACITY OR TITLE Soybean Research Director	DATE 3-14-94
SIGNATURE OF APPLICANT (Owner(s))		CAPACITY OR TITLE	DATE

## EXHIBIT A

## Origin and Breeding History of the Variety

The soybean variety 'S42-60' is derived from the cross 'S42-30' x 'CM455'. The cross was made in the summer of 1985 at the Northrup King Research Center at St. Joseph, Illinois. The F1 and F2 generations were grown at the Northrup King Co. Research Center at Waimea, Kauai, Hawaii, in the winter of 1985-86, the F3 at St. Joseph in the summer of 1986, the F4 and F5 in Waimea in the winter of 1986-87, and the F6 at St. Joseph in the summer of 1987. The F2 through F5 were advanced by harvesting 2-4 seeds from each plant and planting a 600 seed sample from the bulk. In the fall of 1987 approximately 100 random plants were harvested and threshed individually. The seeds from these plants were grown in progeny rows at St. Joseph in the summer of 1988. One of these, numbered J812415, was selected on the basis of yield and agronomic appearance for continued testing. This line was subsequently tested under the temporary designation X9342 and named S42-60. It has been tested at several midwest U.S. locations from 1989 to 1993 and found to yield well compared to other early Maturity Group IV cultivars. The descriptive traits purple flowers and tawny pubescence have been identified and confirmed. S42-60 has been tested for reaction to Race 1, 3, 4 and 7 of Phytophthora megasperma using hypocotyl inoculation of greenhouse grown plants and found to be susceptible. The original F6-derived line (J812415) was heterogeneous for pod color (tan/brown) and hilum color (brown/black).

In the winter of 1990-91, 300 seeds of S42-60 were planted at Waimea. In May, 100 plants were harvested and threshed individually. Seed of 78 plants with brown hilum color were planted in progeny rows at St. Joseph in the summer of 1991. Of these, 22 rows which were homogeneous for tan pod color and brown hilum color were harvested and bulked after inspection to produce Pedigree Seed. A few plants with white flowers or gray pubescence were removed. These plants were assumed to have come from admixture or out-crossing. The 22 rows were uniform for other characteristics. This seed was planted in 1992 to produce Breeder Seed. The increase block was rogued carefully during flowering and at maturity.

Foundation Seed of S42-60 was produced in 1993 from 1992 Breeder Seed. The Iowa Crop Improvement Association inspected the field and found it to meet the standards for Foundation Seed. The National Soybean Variety Review Board approved the variety for Certification on December 10, 1993.

S42-60 is stable and uniform. Over five years of testing and three cycles of seed increase, no variants have been observed except for the original heterogeneity for pod color and hilum color as previously discussed. Any off-type plants which were removed from

increase fields were assumed to have arisen from admixture or outcrossing. Varietal purity will be maintained using progeny rows as described above as needed.

**EXHIBIT B****Novelty Statement for the Variety**

Soybean variety S42-60 is most similar to S42-30 and CM455. It can be differentiated from S42-30 on the basis of hilum color. Seeds of S42-60 have brown hila while seeds of S42-30 have black hila. S42-60 can be differentiated from CM455 on the basis of pod color. S42-60 has tan pods while CM455 has brown pods.

U.S. DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL MARKETING SERVICE  
 LIVESTOCK, MEAT, GRAIN & SEED DIVISION  
 PLANT VARIETY PROTECTION OFFICE  
 BELTSVILLE, MARYLAND 20705

EXHIBIT C  
 (Soybean)

OBJECTIVE DESCRIPTION OF VARIETY  
 SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Northrup King Co.	TEMPORARY DESIGNATION X9342, J812415	VARIETY NAME S42-60
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) P. O. Box 949 Washington, Iowa 52353-0949 Attention: John C. Thorne		FOR OFFICIAL USE ONLY PVPO NUMBER 9400141

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,   ).

## 1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios =  $\leq 1.2$ )  
 3 = Elongate (L/T ratio  $> 1.2$ ; T/W =  $\leq 1.2$ )

2 = Spherical Flattened (L/W ratio  $> 1.2$ ; L/T ratio =  $\leq 1.2$ )  
 4 = Elongate Flattened (L/T ratio  $> 1.2$ ; T/W  $> 1.2$ )

## 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow      2 = Green      3 = Brown      4 = Black      5 = Other (Specify) \_\_\_\_\_

## 3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton')      2 = Shiny ('Nebsoy'; 'Gasoy 17')

## 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

## 5. HILUM COLOR: (Mature Seed)

1 = Buff      2 = Yellow      3 = Brown      4 = Gray      5 = Imperfect Black      6 = Black      7 = Other (Specify) \_\_\_\_\_

Up to 2% other hilum color

## 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow      2 = Green

## 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low      2 = High

## 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1<sup>a</sup>)      2 = Type B (SP1<sup>b</sup>)

## 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')      2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')  
 3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')  
 4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

## 10. LEAFLET SHAPE:

1 = Lanceolate      2 = Oval      3 = Ovate      4 = Other (Specify) \_\_\_\_\_

11. LEAFLET SIZE:

☐ 2

1 = Small ('Amsoy 71'; 'A5312')  
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

12. LEAF COLOR:

☐ 2

1 = Light Green ('Weber'; 'York')  
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

13. FLOWER COLOR:

☐ 2

1 = White

2 = Purple

3 = White with purple throat

14. POD COLOR:

☐ 1

1 = Tan

2 = Brown

3 = Black

15. PLANT PUBESCENCE COLOR:

☐ 2

1 = Gray

2 = Brown (Tawny)

16. PLANT TYPES:

☐ 3

1 = Slender ('Essex'; 'Amsoy 71')  
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

17. PLANT HABIT:

☐ 3

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

18. MATURITY GROUP:

☐ 7

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

☐ 0

Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)

☐ 1

Bacterial Blight (*Pseudomonas glycinea*)

☐ 0

Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

☐ 1

Brown Spot (*Septoria glycines*)

Frogeye Leaf Spot (*Cercospora sojina*)

☐ 0

Race 1

☐ Race 2

☐ Race 3

☐ Race 4

☐ Race 5

☐ Other (Specify)

☐ 0

Target Spot (*Corynespora cassiicola*)

☐ 0

Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)

☐ 0

Powdery Mildew (*Microsphaera diffusa*)

☐ 1

Brown Stem Rot (*Cephalosporium gregatum*)

☐ 2

Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

Moderately Resistant, Southern Stem Canker

## 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

## FUNGAL DISEASES: (Continued)

<input checked="" type="checkbox"/> 1	Pod and Stem Blight ( <i>Diaporthe phaseolorum</i> var; <i>sojae</i> )												
<input checked="" type="checkbox"/> 1	Purple Seed Stain ( <i>Cercospora kikuchii</i> )												
<input type="checkbox"/> 0	Rhizoctonia Root Rot ( <i>Rhizoctonia solani</i> )												
Phytophthora Rot ( <i>Phytophthora megasperma</i> var. <i>sojae</i> )													
<input checked="" type="checkbox"/> 1	Race 1	<input type="checkbox"/> 0	Race 2	<input checked="" type="checkbox"/> 1	Race 3	<input checked="" type="checkbox"/> 1	Race 4	<input type="checkbox"/> 0	Race 5	<input type="checkbox"/> 0	Race 6	<input checked="" type="checkbox"/> 1	Race 7
<input type="checkbox"/> 0	Race 8	<input type="checkbox"/> 0	Race 9	<input type="checkbox"/>	Other (Specify) _____								

## VIRAL DISEASES:

<input type="checkbox"/> 0	Bud Blight (Tobacco Ringspot Virus)
<input type="checkbox"/> 0	Yellow Mosaic (Bean Yellow Mosaic Virus)
<input type="checkbox"/> 0	Cowpea Mosaic (Cowpea Chlorotic Virus)
<input type="checkbox"/> 0	Pod Mottle (Bean Pod Mottle Virus)
<input checked="" type="checkbox"/> 1	Seed Mottle (Soybean Mosaic Virus)

## NEMATODE DISEASES:

Soybean Cyst Nematode ( <i>Heterodera glycines</i> )									
<input type="checkbox"/>	Race 1	<input type="checkbox"/>	Race 2	<input checked="" type="checkbox"/> 1	Race 3	<input checked="" type="checkbox"/> 1	Race 4	<input type="checkbox"/>	Other (Specify) _____
<input type="checkbox"/> 0	Lance Nematode ( <i>Hoplolaimus Colombus</i> )								
<input type="checkbox"/> 0	Southern Root Knot Nematode ( <i>Meloidogyne incognita</i> )								
<input type="checkbox"/> 0	Northern Root Knot Nematode ( <i>Meloidogyne Hapla</i> )								
<input type="checkbox"/> 0	Peanut Root Knot Nematode ( <i>Meloidogyne arenaria</i> )								
<input type="checkbox"/> 0	Reniform Nematode ( <i>Rotylenchulus reniformis</i> )								
<input type="checkbox"/>	OTHER DISEASE NOT ON FORM (Specify): _____								

## 20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

<input type="checkbox"/> 0	Iron Chlorosis on Calcareous Soil
<input type="checkbox"/>	Other (Specify) _____

## 21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

<input type="checkbox"/> 0	Mexican Bean Beetle ( <i>Epilachna varivestis</i> )
<input type="checkbox"/> 0	Potato Leaf Hopper ( <i>Empoasca fabae</i> )
<input type="checkbox"/>	Other (Specify) _____

## 22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	S42-50	Seed Coat Luster	S42-30
Leaf Shape	S39-11	Seed Size	S39-11
Leaf Color	S42-30	Seed Shape	S42-30
Leaf Size	S42-30	Seedling Pigmentation	S29-39



**23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data**

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
Submitted	130	2.6	84	7.4	10.8	40.4	22.2	17.7	2-4
S42-30 Name of Similar Variety	126	2.1	80	7.3	11.3	42.0	21.6	16.1	2-4

**PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:**

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A<sub>2</sub> in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

8

**EXHIBIT E****Statement of the Basis of Applicant's Ownership**

Soybean variety S42-60 was developed from germplasm sources cited in Exhibit A of this application. Northrup King Co. believes that the variety is novel as defined in the Plant Variety Protection Act and, therefore, that Northrup King Co. is the sole owner of the variety.